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EXAMINER

ZIMMERMAN, GLENN

ART UNIT PAPER NUMBER

2879

DATE MAILED: 08/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/816,328

Applicant(s)

SANO ET AL.

Examiner

Glenn Zimmerman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-11 and 13-15 is/are rejected.
- 7) ☒ Claim(s) 2 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Amendment, filed on June 11, 2003, has been entered and acknowledged by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 7 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Kurogi et al. US Patent Application Publication 2002/00084474 A1.

Regarding claim 1, Kurogi et al. discloses a plasma display apparatus (**title; PDP Fig. 9 ref. 1d**) comprising: a plurality of display element electrodes (**conductive Protrusions Teeth reverse trapezoid shaped Fig. 9 ref. 417**) each including a pair of electrode segments with linear edges (**ref. 417**) opposing each other, separated by a gap of predetermined distance (**Fig. 9 no ref. #; surface discharge gap Fig. 3 ref. w1**), in which the width of each of the electrode segments narrows continuously across the display element electrode segment beginning at the associated one of the linear

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edges and in a direction away from the linear edges toward a bus electrode (**base Fig. 9 ref. 411d or metal film ref. 42d**) to which the display element electrode is connected;

A front substrate (**glass substrate Fig. 2 ref. 11**) on which the plurality of display element electrodes are arranged along a row direction and a column direction (**Fig. 9 no ref. #**);

A barrier structure (**barrier ribs ref. 29d**), the inner surfaces of which being disposed along the outer ends of the plurality of display element electrodes thereby defining a plurality of cells each of which is coated with a phosphor member (**fluorescent layers Fig. 2 ref. 28R, 28B and 28G**) and is activated by a discharge of energy from one of the plurality of display element electrodes so as to emit light; and a back substrate (**glass substrate ref. 21**) disposed opposing the front substrate with, the barrier structure therebetween.

Regarding claim 3, Kurogi et al. discloses a plasma display apparatus according to claim 1, wherein the pair of electrode segments each have a triangular or trapezoidal shape (**conductive Protrusions Teeth reverse trapezoid shaped Fig. 9 ref. 417**).

Regarding claim 7, Kurogi et al. discloses a plasma display apparatus according to claim 1, further comprising a plurality of address electrodes (**address electrodes Fig. 2 ref. A**) each locally disposed, with respect to the row direction, from the center of the associated column of the plurality of cells as viewed perpendicularly to the front substrate and the back substrate.

Regarding claim 15, Kurogi et al. discloses a plasma display apparatus (**title; PDP Fig. 9 ref. 1**) comprising: a plurality of display element electrodes (**conductive**

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protrusions teeth reverse trapezoid shaped ref. 417) each including a pair of electrode segments with linear edges opposing each other (**ref. 417**), separated by a gap of predetermined distance (**Fig. 9 no ref. \$; surface discharge gap Fig. 3 ref. w1**), each of the electrode segments having a portion where the width continuously narrows across the electrode segment (**reverse trapezoid shaped ref. 417**) in the direction away from the associated one of the linear edges toward a bus electrode (**base Fig. 9 ref. 411d or metal film ref. 42d**) to which the display element electrode is connected;

A front substrate (**glass substrate Fig. 2 ref. 11**) on which the plurality of display element electrodes are arranged along a row direction and a column direction (**Fig. 9 no ref. #**);

A barrier structure (**barrier ribs ref. 29d**), the inner surfaces of which being disposed along the outer ends of the plurality of display element electrodes thereby defining a plurality of cells each of which is coated with a phosphor member (**fluorescent layers Fig. 2 ref. 28R, 28B and 28G**) and is activated by a discharge of energy from one of the plurality of display element electrodes so as to emit light; and

A back substrate (**glass substrate ref. 21**) disposed opposing the front substrate with, the barrier structure therebetween.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komaki et al. U.S. Patent 6,236,160 in view of Kurogi et al. US Patent Application Publication 2002/00084474 A1.

Regarding claim 1, Komaki et al. teaches a plasma display apparatus **(title)** comprising: a plurality of display element electrodes each including a pair of electrode segments **(T-shaped electrode projecting portions Fig. 1 ref. 3a)** with linear edges opposing each other, separated by a predetermined distance, in which the width of each of the electrode segments narrows across the display element electrode segment beginning at the associated one of the linear edges **(ref. 3a)** and in a direction away from the linear edges toward a bus electrode to which the display element electrode is connected;

A front substrate **(glass substrate on the display screen side Fig. 2 ref. 1)** on which the plurality of display element electrodes are arranged along a row direction and a column direction **(Fig. 1)**;

A barrier structure **(ribs or partitions ref. 12 and/or second ribs ref. 9)**, the inner surfaces of which being disposed along the outer ends of the plurality of display element electrodes thereby defining a plurality of cells each of which is coated with a phosphor member and is activated by a discharge energy from of said plurality of display element electrodes so as to emit light **(col. 6 lines 49-56)**; and

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A back substrate (**glass substrate on the back side Fig. 2 ref. 2**) disposed opposing the front substrate with, the barrier structure therebetween, but fails to teach the width narrows continuously. Kurogi et al. in the analogous art teaches a width that narrows continuously (**reversed trapezoid protrusions conductive electrode Fig. 9 ref. 417**). Additionally, Kurogi et al. teaches incorporation of such a width that narrows continuously to improve suppressing increase of the firing voltage (**paragraph 66**) and would also work as an electrode in a PDP (**paragraph 65**).

Consequently it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use the width narrowing continuously in the electrode of Komaki et al. since such a modification would improve suppressing the increase of the firing voltage and would also work as an electrode in a PDP as taught by Kurogi et al.

Regarding claim 4, Komaki et al. disclose a plasma display apparatus according to claim 1, wherein the barrier structure comprises a plurality of separate units which define each of the plurality of cells so as to provide an evacuation channel structure (**Fig. 2 space between the two reference 9s**) in between the plurality of separate units.

Regarding claim 5, Komaki et al. disclose a plasma display apparatus according to claim 1, wherein the width of the barrier structure is varied (**Fig. 2 space between the two reference 9s and ribs or partitions ref. 12 and/or second ribs ref. 9**) in accordance with the width of each of the plurality of display element electrodes so as to define a channel passing through the plurality of cells in the column direction.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurogi et al. US Patent Application Publication 2002/00084474 A1 in view of Kim U.S. Patent 5,124,615.

Regarding claim 6, Kurogi et al. teaches all the limitations of claim 6, but fails to teach wherein the barrier structure is formed in a lattice pattern as viewed perpendicularly to the front substrate and the back substrate. Kim in the analogous art teaches wherein the barrier structure is formed in a lattice pattern (**lattice type barrier rib Fig. 2 ref. 15**) as viewed perpendicularly to the front substrate and the back substrate. Additionally, Kim teaches incorporation of such a lattice pattern to improve the defining of a plurality of discharge cells (**col. 4 lines 31-32**).

Consequently it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use the lattice pattern in the barrier structure of Kurogi et al. since such a modification would improve the defining of a plurality of discharge cells as taught by Kim.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurogi et al. US Patent Application Publication 2002/00084474 A1 in view of Shinoda et al. U.S. Patent 5,661,500.

Regarding claim 8, Kurogi et al. teach all the limitations of claim 8, but fail to teach wherein the height of the barrier structure is made 130 μm or higher. Shinoda et al. in the analogous art teach a wherein the height of the barrier structure is made 130 μm or higher (**col. 11 lines 46-50**). Additionally, Shinoda et al. teach incorporation of

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such a height to improve the structure by alleviating the shock by ion bombardment during discharge (**col. 11 lines 49-52**).

Consequently it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use a 130 μm barrier structure height in the PDP of Komaki et al. since such a modification would alleviate the shock by ion bombardment during discharge as taught by Shinoda et al.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurogi et al. US Patent Application Publication 2002/00084474 A1 in view of Shinoda et al. U.S. Patent 5,661,500 and Mizobata U.S. Patent Application Publication 2002/0063526.

Regarding claim 9, Kurogi et al. and Shinoda et al. teach all the limitations of claim 9, but fail to teach a plurality of dielectric projections formed on the plurality of address electrodes on. Mizobata in the analogous art teaches a dielectric projection (**second white dielectric layer Fig. 4 ref. 10b**) formed on the plurality of address electrodes (**ref. 21**). Additionally, Mizobata teaches incorporation of such a dielectric projection to improve the reduction in scanning pulse voltage (**paragraph 44**).

Consequently it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use the dielectric projection in plasma display of Kurogi et al. and Shinoda et al. since such a modification would improve the reduction in scanning pulse voltage as taught by Mizobata.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurogi et al. US Patent Application Publication 2002/00084474 A1 in view of Okumura et al. U.S. Patent 6,100,633.

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Regarding claim 10, Kurogi et al. teaches all the limitations of claim 10, but fails to teach wherein each of the plurality of cells is provided with a reflecting layer disposed below the phosphor member. Okumura et al. in the analogous art teaches wherein each of the plurality of cells is provided with a reflecting layer disposed below the phosphor member (**col. 5 lines 31-47**). Additionally, Okumura et al. teaches incorporation of such a reflecting layer disposed below the phosphor member to improve the increasing of reflecting of visible light (**col. 5 lines 31-33**).

Consequently it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have wherein each of the plurality of cells is provided with a reflecting layer disposed below the phosphor member in the phosphor member of Kurogi et al. since such a modification would improved the increasing of reflecting of visible light as taught by Okumura et al.

Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nunomura U.S. Patent 6,479,932 in view of Mizobata U.S. Patent Application Publication 2002/0063526.

Regarding claim 11, Nunomura teaches a plasma display apparatus (**title**) comprising: a plurality of display element electrodes (**transparent electrode Fig. 5 ref. 13**) each including a pair of rectangular electrode segments (**discharge part Fig. 6 ref. 61**) with linear edges opposing each other, separated by a gap of predetermined distance;

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A front substrate (**glass substrate Fig. 1B and 5 ref. 11**) on which the plurality of display element electrodes are arranged along a row direction and a column direction (**Fig. 5**);

A barrier structure (**partition walls Fig. 6 ref. 17**), the inner surfaces of which being disposed along one or more of the outer ends of the plurality of display element electrodes, thereby defining a plurality of cells each of which is coated with a phosphor member (**powdery fluorescent substances Fig. 1C and ref. 20**) activated by a discharge of energy from one of the plurality of display element electrodes so as to emit light; and a back substrate (**glass substrate Fig. 1C and 5 ref. 12**) disposed opposing the front substrate with the barrier structure therebetween, but fails to teach a dielectric layer disposed along one or more of the outer ends of the plurality of display element electrodes. Mizobata in the analogous art teaches a dielectric layer disposed along one or more of the outer ends of the plurality of display element electrodes (**second white dielectric layer film Fig. 4 ref. 10b**). Additionally, Mizobata teaches incorporation of such a dielectric layer to improve the reduction in scanning pulse voltage (**paragraph 44**).

Consequently it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use the dielectric layer in the plasma display of Nunomura since such a modification would improve the reduction in scanning pulse voltage as taught by Mizobata.

Regarding claim 13, Nunomura discloses a plasma display apparatus according to claim 11, further comprising a plurality of address electrodes (**data electrode Fig. 19**

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ref. 16D) each having a linear portion extending along one side of the plurality of cells, the plurality of address electrodes each having a plurality of projecting portions (**large width part ref. 33**) disposed so as to face predetermined one of the pair of electrode segments constituting the associated one of the plurality of display element electrodes.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nunomura U.S. Patent 6,479,932 in view of Mizobata U.S. Patent Application Publication 2002/0063526 and Okumura et al. U.S. Patent 6,100,633.

Regarding claim 14, Nunomura and Mizobata teach all the limitations of claim 14, but fails to teach wherein each of the plurality of cells is provided with a reflecting layer disposed below the phosphor member. Okumura et al. in the analogous art teach wherein each of the plurality of cells is provided with a reflecting layer disposed below the phosphor member (**visible light reflective layer Fig. 2 ref. 11**). Additionally, Okumura et al. teach incorporation of such a reflective layer to improve the structure by increasing the reflection of the emitted light (**col. 5 lines 30-35**).

Consequently it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use a reflective layer in the plasma display panel of Nunomura and Mizobata since such a modification would increase the reflection of the emitted light as taught by Okumura et al.

Allowable Subject Matter

Claims 2 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 2, the following is an examiner's statement of reasons for allowance: The prior art of record neither shows nor suggests a plasma display apparatus including the combination of all the limitations as set forth in claim 2, and specifically wherein the pair of electrode segments each have a semielliptical or semicircular shape could not be found elsewhere in prior art.

Regarding claim 12, the following is an examiner's statement of reasons for allowance: The prior art of record neither shows nor suggests a plasma display apparatus including the combination of all the limitations as set forth in claim 12, and specifically a plurality of separate units which define each of the plurality of cells so as to provide an evacuation channel structure in between the plurality of separate units could not be found elsewhere in prior art.

Response to Arguments

Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

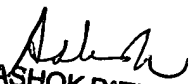
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenn Zimmerman whose telephone number is (703) 308-8991. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703) 305-4794. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is n/a.


Glenn Zimmerman


ASHOK PATEL
PRIMARY EXAMINER